

## CLAIMS:

1. Adaptive filter comprising at least two inputs for receiving at least two signals, and an output for supplying an output signal, characterized in that the coefficient updates are determined in a transformed domain and that the filter comprises means to reduce the effect of the correlation between the input signals on the coefficient updates.
2. Adaptive filter according to claim 1, characterized in that the transformed domain is the frequency domain.
3. Adaptive filter according to claim 2, characterized in that the filter comprises an update algorithm with transformed auto- and a cross correlation matrices.
4. Adaptive filter according to claim 2, characterized in that the reduction of the effect of the correlation is achieved by multiplying the frequency domain input signals with the inverse of the input channel's power matrix.
5. Adaptive filter according to claim 4, characterized in that the input channel's power matrix is determined by a first order recursive network, with the product of the frequency domain input signals and their conjugates as input, and further characterized in that at each iteration a certain positive value is added to all elements of the main diagonal.
6. Adaptive filter according to claim 4, characterized in that the algorithm comprises a solving a linear set of equations with the input channel power matrix as one of the elements of the equations.
7. Adaptive filter according to claim 3, characterized in that the inverse of the input channel's matrix is estimated directly, using a recursive update algorithm, and further characterized in that a limit is imposed on the eigenvalues of the matrix.
8. Signal processing device comprising a filter according to claim 1.

9. Signal processing device according to claim 8, characterized in that the device further comprises a dynamic echo and noise suppressor as a post-processing device coupled to an output of the filter.

5 10. Signal processing device according to claim 8, characterized in that the signal-processing device comprises a programmable filter.

11. Teleconferencing system comprising at least one signal-processing device according to claim 8.

10 12. Voice controlled electronic device comprising at least one signal-processing device according to claim 8.

13. Noise cancellation system comprising at least one signal-processing device  
15 according to claim 8.

14. Method for filtering at least two signals and for supplying an output signal characterized in that the method determines the coefficient updates in the frequency domain and that the method reduces the effect of correlation between the input signals on the  
20 coefficient updates.

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